

REMARKS

This application has been reviewed in light of the Office Action dated February 6, 2003.

As an initial matter, Applicants seek confirmation that Claims 1-3, 7-9, 13, 14, 16, and 18-29 are pending in this application, of which, Claims 8, 9, 16, and 19-29 have been withdrawn from consideration. Therefore, Claims 1-3, 7, 13, 14, and 18 are presented for examination.

Claims 1 and 13 are in independent form. Claims 1-3, 7, 13, 14, and 18 have been amended to define more clearly what Applicants regard as their invention. Favorable reconsideration is requested.

The Office Action includes an objection to the title of the invention as allegedly not being indicative of the invention to which the claims are directed. Applicants have amended the title to read, --DRIVE CIRCUIT CONNECTION STRUCTURE INCLUDING A SUBSTRATE, CIRCUIT BOARD, AND SEMICONDUCTOR DEVICE, AND DISPLAY APPARATUS INCLUDING THE CONNECTION STRUCTURE--. Applicants submit that the amended title is indicative of the invention to which the claims are directed, and respectfully request withdrawal of the objection to the title.

The Office Action includes an objection to the abstract of the disclosure as allegedly not clearly stating what is new in the art to which the invention pertains. Applicants have replaced the original abstract with a new abstract and submit that the new abstract clearly states what is new in the art to which the invention pertains. Accordingly, Applicants respectfully request withdrawal of the objection to the abstract.

Claims 1, 3, and 7 were objected to because of the language, "a first substrate forming a display panel." The Office Actions states that the substrate does not form the display panel but is part of the display device. In response, Applicants have amended the relevant portion of Claim 1 to read --a substrate having a part of a display panel and an electrode terminal formed thereon--. Applicants believe that this amendment obviates the objections to Claims 1, 3, and 7, and respectfully request withdrawal of these objections.

Claims 1-3, 7, 13, and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicants' Admitted Prior Art ("APA"). (Applicants note that Claim 14 was not mentioned in this rejection.) Applicants submit that amended independent Claims 1 and 13, together with the remaining dependent claims, are patentably distinct from APA for at least the following reasons.

Claim 1 requires a circuit connection structure, including a substrate, a circuit board, a semiconductor, and a flexible wiring member. The substrate has a part of a display panel and an electrode terminal formed thereon. The circuit board is disposed with a space between the circuit board and the substrate and has thereon an electrode terminal. The semiconductor device includes a driver IC, the semiconductor device having a first electrode and a second electrode. The flexible wiring member has a conductor, wherein opposite ends of the conductor are connected to the second electrode and the electrode terminal of the circuit board, respectively. Also, the semiconductor device bridges the space between the substrate and the circuit board such that the driver IC is located over the

space and the first electrode of the semiconductor device is connected to the electrode terminal on the substrate with an anisotropic conductive adhesive.

A notable feature of Claim 1 is that the semiconductor device bridges the space between the substrate and the circuit board such that the driver IC is located over the space and the first electrode of the semiconductor device is connected to the electrode terminal on the substrate with an anisotropic conductive adhesive. Support for this feature can be found at least in reference to Figure 2, and in the specification at least at page 11, line 14 to page 12, line 6. Figure 2 shows the driver IC 5 located over the space between the circuit board 3 and the substrate 1b. The cited portion of the specification states in part that

“each driver IC 5 is connected to the glass substrate 1b by first positionally aligning projection electrodes 13 . . . of the device IC 5 with the electrode terminals 12 on the glass substrate 1b and connecting the projection electrodes 13 and the electrode terminals 12 via an anisotropic conductive adhesive 14 under application of heat and pressure. The projection electrodes 13 . . . may be formed at a minute connection of preferably 50 μ m or smaller By connecting the driver IC 5 provided with the projection electrodes 13 to the electrode terminals 12 of the glass substrate 1b without via a flexible wiring member 4a, it becomes possible to obviate a thermal positional deviation due to heat during the heat-pressure bonding, thus ensuring a prescribed connection pitch.”

In other words, the driver IC 5 is connected directly to the substrate 1b by connecting the projection electrode 13, which is an example of the “first electrode” recited in the claim language, to the electrode terminal 12 of the substrate 1b with an anisotropic conductive adhesive 14. This arrangement places the driver IC 5 over the hole separating the circuit

board 3 and the substrate 1b. By directly connecting the driver IC 5 to the substrate 1b in this manner, thermal positional deviation due to heat during heat pressure bonding is obviated. This ensures a prescribed connection pitch. (It is to be understood, of course, that the scope of Claim 1 is not limited to the details of this embodiment, which is referred to only for purposes of illustration.)

In contrast, APA, shown in Figure 13 and referred to in the Office Action, does not directly connect the driver IC 5p to the substrate 1bp in the manner required by Claim 1. In particular, the driver IC 5p is connected to the substrate 1bp via a flexible wiring member, or TCP, 4ap. In other words, the electrode 15p is not directly connected to the electrode 12p of the substrate 1bp. The prior-art arrangement leads to the thermal positional deviation remedied by the present invention. Therefore, Applicants submit that nothing in APA would teach or suggest to a person having ordinary skill in the relevant art, the semiconductor device that bridges the space between the substrate and the circuit board such that the driver IC is located over the space and the first electrode of the semiconductor device is connected to the electrode terminal on the substrate with an anisotropic conductive adhesive. Accordingly, Applicants submit that Claim 1 is patentable over APA, and respectfully request that the Section 103(a) rejection be withdrawn.

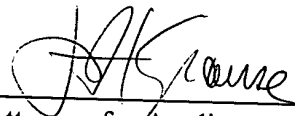
Independent Claim 13 includes a feature very similar to the one discussed above in connection with Claim 1 and is believed to be patentable for at least the same reasons.

The other rejected claims in this application depend from either Claim 1 or Claim 13 discussed above and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and the allowance of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,


Attorney for Applicants

Registration No. 24613

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

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